

154428

United States General Accounting Office

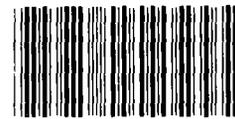
GAO

Briefing Report to Congressional  
Requesters

October 1987

# DEFENSE BUDGET

## Contingency Funds in Three Aircraft Procurement Programs



134428

**RESTRICTED** — Not to be released outside the General  
Accounting Office except on the basis of specific approval  
by the Office of Congressional Relations.

**RELEASED**

---

---

[The main body of the page is mostly blank, with a vertical dashed line on the left side and a few small, faint marks.]



United States  
General Accounting Office  
Washington, D.C. 20548

National Security and  
International Affairs Division

B-229009

October 9, 1987

The Honorable Les Aspin  
Chairman, Committee on Armed Services  
House of Representatives

The Honorable Norman Sisisky  
House of Representatives

This briefing report responds to your request that we identify the Department of Defense's (DOD's) and the services' policies on "management reserves" and other contingency funds and the amounts of such funding in three aircraft programs: the Air Force's B-1B and C-5B and the Navy's F/A-18. On April 29 and June 29, 1987, we presented briefings to Congressman Sisisky and committee representatives on the results of our work. This report summarizes the information we presented.

DOD and the services require procurement program budget estimates of all needed funds including contingency funds, which are allowances for program uncertainties. Although DOD and the services do not refer to such contingency funds as "management reserves" in aircraft procurement programs, we identified two types of contingency funds in the C-5B, B-1B, and F/A-18 aircraft programs that are being or have been used by the Air Force and Navy: engineering change order funds for anticipated but unknown design changes and risk funds for unknown costs associated with technical complexities and schedule uncertainties.

The Air Force's B-1B and C-5B and the Navy's F/A-18 aircraft programs include in their estimates funds for engineering change orders. The most current engineering change order program estimates are about \$673.4 million for the B-1B program's development and production phases, as of November 1986, and about \$11.4 million for the C-5B, as of March 1987. According to an F/A-18 program official, about \$29 million was budgeted for engineering change orders in fiscal year 1986.

The B-1B and C-5B program officials told us that certain cost estimates include risk funds. However, program

officials told us that risk funds were not separately identified in program cost estimates and that they could not estimate their amounts. The F/A-18 program officials said that the original cost estimates included risk funds but that current cost estimates do not because the program is stable and costs are based on actual production data.

More detailed discussions of contingency funds in the B-1B, C-5B, and F/A-18 aircraft programs are presented in appendix I.

We also found that certain contractors had established "management reserves." However, these reserves are not contingency funds but amounts of the negotiated contract price withheld from their product divisions for management control purposes, such as balancing cost variances.

In conducting our review, we interviewed DOD, Air Force, and Navy officials from the comptroller, command, and program offices and examined budget and other pertinent documents. We obtained and incorporated the views of responsible DOD, Air Force, and Navy officials where appropriate. They agreed with the information presented in this briefing report. We conducted our review between February and August 1987 in accordance with generally accepted government auditing standards. As requested, we did not obtain official agency comments.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this briefing report until 30 days from its date. At that time, we will send copies to the Secretaries of Defense, the Air Force, and the Navy, and other interested parties.

Should you have any questions, please call me on 275-4268.



Harry R. Finley  
Senior Associate Director

CONTINGENCY FUNDS IN THE AIR FORCEC-5B AND B-1B AND NAVY F/A-18 PROGRAMS

The C-5B aircraft, which is designed to transport large payloads, such as oversized combat equipment, over long distances without refueling, will augment the still-operating C-5A aircraft. The Air Force contracted with Lockheed-Georgia Company to procure 50 C-5B aircraft. The current total estimated program cost is about \$7.0 billion (in then-year dollars).<sup>1</sup> As of July 1987, 16 aircraft had been delivered.

The B-1B is a multi-role, long-range strategic bomber designed to penetrate enemy defenses using electronic jamming equipment. The program costs are capped at \$20.5 billion (in fiscal year 1981 dollars) for 100 aircraft. The Air Force contracted with Rockwell International Corporation for the airframe, Boeing Military Airplane Company for the offensive avionics, Airborne Instruments Laboratory for the defensive avionics, and General Electric for the engine. As of July 1987, 57 aircraft had been delivered.

The Aeronautical Systems Division of the Air Force Systems Command is responsible for the design, development, and acquisition of the B-1B and C-5B aircraft.

The F/A-18 aircraft performs both fighter and attack missions for the Navy and the Marine Corps. Manufactured by the McDonnell Douglas Corporation, it entered production in 1979 and service in 1983. Currently, the combined Navy and Marine Corps procurement is expected to reach 1,157 aircraft by 1995 at a total estimated cost of approximately \$37.4 billion (in then-year dollars). As of July 1987, 394 aircraft had been delivered. The Naval Air Systems Command is responsible for all technical and management aspects of the F/A-18.

ENGINEERING CHANGE ORDERS

The Department of Defense (DOD) and the services allow engineering change order (ECO) funds, which are for anticipated but unknown design changes to systems in development and production. DOD requires that ECOs be separately identified. The Air Force and Navy use different procedures to develop ECO budget estimates.

Estimating instructions in the Air Force Systems Command's budget manual provide only limited guidance on estimating ECO amounts.

---

<sup>1</sup>Then-year dollars measure the cost of goods and services in terms of prices current at the time of purchase.

The instructions state that the estimates should be based on historical precedence and engineering considerations. The Aeronautical Systems Division allows the ECO funding level to be about 10 percent of the estimated costs for the development phase and from 1 to 12 percent of recurring flyaway costs<sup>2</sup> for the production phase. The ECO funding level for the production phase is based on an Aeronautical Systems Division model that considers the system's schedule, complexity, and other factors.

The Naval Air Systems Command does not provide written guidance for estimating ECOs, but command and F/A-18 program officials told us that generally ECO estimates are about 2 percent of the amount budgeted for the aircraft equipment, excluding government furnished equipment. This percentage may vary according to the system's complexity, maturity, and other factors.

The C-5B, B-1B, and F/A-18 programs included funds for ECOs in their estimates.

#### C-5B program

The ECO estimate for the C-5B program has declined, from about \$540.0 million, or 7.5 percent of recurring flyaway costs as of January 1983, to \$11.4 million, or about 0.2 percent of recurring flyaway costs, as of March 1987. According to a program official, the early ECO estimates were high because there was greater uncertainty at that stage of the program.

A program official said that the fiscal year 1984 ECO funding estimate had been determined using various estimating methodologies; the fiscal year 1985 estimate had been determined using the Aeronautical Systems Division's ECO model; and subsequent estimates were based on actual program experience with engineering changes.

#### B-1B program

The B-1B program is undergoing concurrent development and production. Program officials said that the ECO funding estimate is about 10 percent of the estimated development cost, or \$524.8 million for the development phase, and 3 percent of the recurring flyaway costs, or \$148.6 million for the production phase, as of November 1986. Program officials stated that the Aeronautical Systems Division's ECO model had been used to develop the original September 1982 production ECO estimate of 6 percent of the

---

<sup>2</sup>Recurring flyaway costs are costs for installed aircraft components, such as the airframe, engine, and avionics.

recurring flyaway costs, or \$732.7 million. ECO funding levels are now based on actual engineering changes.

#### F/A-18 program

Program officials told us that the ECO estimates for the F/A-18 have been about 2 percent of the amount budgeted for aircraft equipment (excluding government furnished equipment) and that these ECO funds usually have been obligated. For fiscal year 1986, the program office budgeted about \$29 million, or 2 percent of the amount budgeted for aircraft equipment, excluding government furnished equipment.

#### RISK FUNDS

DOD and the services' policies require that procurement budget estimates include all needed funds. Risk funds are for unknown costs associated with technical complexities and schedule uncertainties in programs.

The Air Force Systems Command's policy states that the determination of risk funds should take into account such factors as the program's phase in the acquisition cycle, concurrency between development and production, and system complexity. Program offices are not required to identify or track risk funds. The policy does not provide specific guidance for estimating the amounts.

Naval Air Systems Command and F/A-18 program officials told us that there is no written policy addressing the estimation of risk funds.

The C-5B and B-1B cost estimates include some risk funds. F/A-18 program officials said that the original cost estimates included risk funds, but current estimates do not.

#### C-5B and B-1B programs

Program officials for the C-5B and B-1B told us that cost estimates contain risk funds for some items. They said that most risk funds were incorporated into the programs' original baseline estimates and were not specifically identified. Therefore, program officials stated that they did not know and could not estimate the amount of risk funds in the programs' original baseline estimates.

#### F/A-18 program

According to Naval Air Systems Command and program officials, the original 1972 production cost estimates for the F/A-18 included risk funds, but they were an inseparable part of the cost data and could not be identified. Command and program officials stated that

current cost estimates do not include funds for uncertainties because the program is stable and costs are based on actual production data.

(392320)

---

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office  
Post Office Box 6015  
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

United States  
General Accounting Office  
Washington, D.C. 20548

First-Class Mail  
Postage & Fees Paid  
GAO  
Permit No. G100

Official Business  
Penalty for Private Use \$300

Address Correction Requested